

CLAIMS

1. A packaging tape adhesive composition for cardboard  
5 box sealing tapes, comprising:
  - a linear tetrablock copolymer S-I-S-I', obtainable by full sequential polymerization of predominantly styrene and of predominantly isoprene respectively, having an apparent molecular weight in the range of from 205,000 to 10 225,000, and wherein both predominantly poly(styrene) blocks have an apparent molecular weight of from 10,000 to 12,000, wherein the intermediate S-I diblock copolymer has an apparent molecular weight in the range of from 130,000 to 185,000, wherein the intermediate S-I-S 15 triblock copolymer has an apparent molecular weight in the range of from 145,000 to 195,000, and wherein the poly(styrene) content is in the range of from 14 to 16 wt%,
    - at least one tackifying resin in an amount of from 20 50 to 150 parts by weight per 100 parts by weight of block copolymers,
    - optionally a naphtenic oil or paraffinic oil in an amount of from 0 to 50 parts by weight per 100 parts by weight of block copolymers, and
    - optionally an antioxidant and/or other auxiliaries, in an amount from 0.1 to 10 parts by weight per 100 parts by weight of block copolymer.
2. Packaging tape adhesive compositions according to 25 claim 1, wherein the block copolymer is composed of substantially pure poly(styrene) homopolymer blocks and of substantially pure poly(isoprene) homopolymer blocks. 30

3. Packaging tape adhesive composition according to claims 1 and 2, wherein the molecular weight of the block I is significantly greater than that one of I'.
4. Packaging tape adhesive composition according to any 5 one of claims 1 to 3, wherein the styrene content varies from 14.5 to 15.5 wt% and more preferably is about 15.0 wt%.
5. Packaging tape adhesive composition according to any one of claims 1 to 4, wherein the apparent molecular 10 weight of the complete tetrablock copolymer is in the range of from 210,000 to 217,000.
6. Packaging tape adhesive composition according to any one of claims 1 to 5, wherein the tetrablock comprises predominantly poly(isoprene) blocks I, having a molecular 15 weight of from 124,000 to 175,000 and more preferably from 125,000 to 172,000, as calculated from the apparent molecular weights measured after the first and second consecutive polymerization steps.
7. Packaging tape adhesive composition according to any 20 one of claims 1 to 6, wherein the tetrablock copolymers comprise terminal predominantly poly(isoprene) blocks I', having a molecular weight of from 20,000 to 65,000 and most preferably from 22,000 to 64,000, as calculated from the apparent molecular weight measured after the 25 consecutive third and fourth polymerization steps.
8. Packaging tapes for cardboard sealing comprising an adhesive composition according to any one of claims 1-7.
9. Linear tetrablock copolymers S-I-S-I' for the manufacture of packaging tape adhesive compositions for 30 cardboard box sealing, obtainable by full sequential polymerization of predominantly styrene and of predominantly isoprene respectively, having an apparent molecular weight in the range of from 205,000 to 225,000

and wherein both predominantly poly(styrene) blocks have an apparent molecular weight of from 10,000 to 12,000, wherein the intermediate S-I diblock copolymer has an apparent molecular weight in the range of from 130,000 to 5 185,000, wherein the intermediate S-I-S triblock copolymer has an apparent molecular weight in the range of from 145,000 to 195,000, and wherein the poly(styrene) content is in the range of from 14 to 16 wt%.

10. Linear tetrablock copolymers according to claim 9, wherein the molecular weight of the block I is significantly greater than that one of I'.

11. Linear tetrablock copolymers according to claims 9 and 10, wherein the styrene content varies from 14.5 to 15.5 wt% and more preferably is about 15.0 wt%.

15 12. Linear tetrablock copolymers according to any one of claims 9 to 11, wherein the apparent molecular weight of the complete tetrablock copolymer is in the range of from 210,000 to 217,000.

20 13. Linear tetrablock copolymers according to any one of claims 9 to 12, wherein the tetrablock comprises predominantly poly(isoprene) blocks I, having a molecular weight of from 124,000 to 175,000 and more preferably from 125,000 to 172,000, as calculated from the apparent molecular weights measured after the first and second 25 consecutive polymerization steps.

14. Process for the manufacture of pellets, comprising an adhesive composition for packaging tapes for sealing cardboard boxes comprising:

30 a) adding to an extruder  
i. a linear tetrablock copolymer, obtainable by full sequential polymerization of substantially pure styrene and of substantially pure isoprene respectively, having an apparent molecular weight in

the range of from 205,000 to 225,000, and wherein  
both substantially pure poly(styrene) blocks have an  
apparent molecular weight of from 10,000 to 12,000,  
wherein the intermediate S-I diblock copolymer has an  
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apparent molecular weight in the range of from  
130,000 to 185,000; wherein the intermediate S-I-S  
triblock copolymer has an apparent molecular weight  
in the range of from 145,000 to 195,000; wherein the  
poly(styrene) content is in the range of from 14 to  
10  
16 wt%,

- ii. at least one tackifying resin in an amount of from 50 to 150 parts by weight per 100 parts by weight of block copolymers,
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iii. optionally a naphtenic oil or paraffinic oil in an amount of from 0 to 50 parts by weight per 100 parts by weight of block copolymers, and
- iv. optionally an antioxidant and/or other auxiliaries, in an amount from 0.1 to 10 parts by weight per 100 parts by weight of block copolymers.
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v. optionally an antifoaming agent and/or a detergent in an amount of from 500 to 5000 ppm, relative to the weight of the composition,
  - b) blending and extruding the components in the extruder to obtain an extrudate,
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c) pelletizing the extrudate with an underwater pelletizer to obtain wet pellets, and
  - d) drying the wet pellets to obtain pellets containing the adhesive composition and optionally treating the wet or dry pellets with a dusting agent in an amount of from 30  
0.05 to 10% by weight of the total adhesive composition.